

## **Personal Protective Equipment Glossary . . . . . OSHA 29 CFR 1910.132**

**AA** Atomic absorption spectrophotometers

**Action level** A concentration for a specific substance, calculated as an eight (8) hour time-weighted average, which initiates certain required activities such as exposure monitoring and medical surveillance. Typically it is one-half that of the PEL for that substance.

**ACGIH** The American Conference of Governmental Industrial Hygienists is a voluntary organization of professional industrial hygiene personnel in government or educational institutions. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

**Acute Exposure** Single exposure episodes which occur over a short time period.

**ANSI** The American National Standards Institute is a voluntary membership organization (run with private funding) that develops consensus standards nationally for a wide variety of devices and procedures.

**ASHRAE** American Society of Heating, Refrigeration and Air Conditioning Engineers

**Asphyxiant** A chemical (gas or vapor) that can cause death or unconsciousness by suffocation. Simple asphyxiants such as nitrogen, either use up or displace oxygen in the air. They become especially dangerous in confined or enclosed spaces. Chemical asphyxiants, such as carbon monoxide and hydrogen sulfide, interfere with the body's ability to absorb or transport oxygen to the tissues.

**Biohazard Wastes** Discarded materials "that are biological agents or conditions (as an infectious organism or un-secure laboratory condition) that constitutes a hazard to man or his environment." This definition includes "any and all substances which contain materials to which organisms may cause injury or disease to man or his environment, but which are not regulated as controlled industrial waste."

**BSC** Biological Safety Committee

**BSO** Biological Safety Officer

**"C" or Ceiling** A description usually seen in connection with a published exposure limit. It refers to the concentration that should not be exceeded, even for an instant. It may be written as TLV-C or Threshold Limit Value--Ceiling. (See also Threshold Limit Value).

**Carcinogen** Any substance that causes the development of cancerous growths in living tissue, either those that are known to induce cancer in man or animals or experimental

carcinogens that have been found to cause cancer in animals under experimental conditions.

**C.A.S. Number** Identifies a particular chemical by the Chemical Abstracts Service, a service of the American Chemical Society that indexes and compiles abstracts of worldwide chemical literature called "Chemical Abstracts". These numbers are always contained in brackets.

**CDC** Centers for Disease Control

**CFR** Code of Federal Regulations

**Chemical Hygiene Plan** A written program developed and implemented by the employer which sets forth procedures, equipment, personal protective equipment and work practices that are capable of protecting employees from the health hazards presented by hazardous chemicals used in that particular work place and meets the requirements of 29 CFR 1910.1450(e).

**CHP** See Chemical Hygiene Plan

**Chemical Reaction** A change in the arrangement of atoms or molecules to yield substances of different composition and properties. (See Reactivity).

**Chronic Exposure** A series of exposures occurring over a longer period of time.

**Combustible** A combustible liquid or an "Ordinary Combustible" such as wood, paper, etc.

**Combustible Liquid** Any liquid having a flashpoint at or above 100 oF (37.8 oC), but below 200 oF (93.3 oC), except any mixture having components with flashpoints of 200 oF (93.3 oC), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

**Corrosive** Any gas, liquid, or solid that causes destruction of human tissue or a liquid that has a severe corrosion rate on steel. Generally, a substance that has a very low or a very high pH.

**Cutaneous** Pertain to or affecting the skin.

**Decomposition** The breakdown of a chemical or substance into different parts or simpler compounds. Decomposition can occur due to heat, chemical reaction, decay, etc.

**Dermal** Pertaining to or affecting the skin.

**Dermatitis** An inflammation of the skin.

**Designated Area** An area which may be used for work with "select carcinogens, reproductive toxins, or substances which have a high degree of acute toxicity." A

designated area may be the entire laboratory, an area of a laboratory, or a device such as a laboratory hood. A designated area shall be placarded to reflect the designated hazard.

**Dose** The concentration of a substance and the time period during which the exposure occurs. The dose received links hazard and toxicity.

**DOT** The United States Department of Transportation is the federal agency that regulates the labeling and transportation of hazardous materials.

**Dyspnea** Shortness of breath; difficult or labored breathing.

**Emergency Spills** Accidental chemical discharges that present an immediate danger to personnel and/or the environment. Under these circumstances, leave the spill site immediately and send for help.

**Employee** An individual employed in a laboratory work place who may be exposed to hazardous materials in the course of his or her assignments.

**EPA** The Environmental Protection Agency is the governmental agency responsible for administration of laws to control and/or reduce pollution of air, water, and land systems.

**EPA Number** The number assigned to chemicals regulated by the Environmental Protection Agency (EPA).

**Erythema** A reddening of the skin.

### **Fires**

**Class A** Fires in ordinary combustible materials such as wood, cloth, paper, rubber, and many plastics.

**Class B** Fires in flammable liquids, oils, greases, tars, oil-base paints, lacquers and flammable gases.

**Class C** Fires that involve energized electrical equipment where the electrical conductivity of the extinguishing medium is of importance; when electrical equipment is de-energized, extinguishers for class A or B fires may be safely used.

**Class D** Fires in combustible metals such as potassium, sodium, lithium, magnesium, titanium, zirconium.

**Flammable** Any substance which may be classified as a flammable aerosol, flammable gas, flammable liquid or flammable solid.

**Flammable Aerosol** An aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame protection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening.

**Flammable Gas** A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 13 percent by volume or less; or a gas that, at

ambient temperature and pressure, forms a range of flammable mixtures with air wider than 12 percent by volume, regardless of the lower limit.

**Flammable Liquid** Any liquid having a flashpoint below 100oF (37.8oC), except any mixture having components with flashpoints of 100oF (37.8oC), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

**Flammable Solid** A solid, other than a blasting agent or explosive, that is liable to cause fires through friction, absorption of moisture, spontaneous chemical change, retained heat from processing, or which can be ignited readily, and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

**Hazard** The possibility that exposure to a substance will cause injury when a specific quantity is used under certain conditions.

**Health Hazard** A substance for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. This term includes carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes, or mucous membranes.

**ICP** Inductively-coupled argon spectrometers

**IDLH** Immediately dangerous to life or health concentrations represent the maximum concentration from which one could escape within 30 minutes without a respirator and without experiencing any escape-impairing (e.g., severe eye irritation) or irreversible health effects.

**Ignitable** A solid, liquid, or compressed gas that has a flashpoint of less 140oF. Ignitable material may be regulated by the EPA as a hazardous waste, as well.

**Incompatible** The term applied to two substances to indicate that one material cannot be mixed with the other without the possibility of a dangerous reaction.

**Ingestion** Taking a substance into the body through the mouth as food, drink, medicine, or unknowingly as on contaminated hands or cigarettes, etc.

**Inhalation** The breathing in of an airborne substance that may be in the form of gases, fumes, mists, vapors, dusts, or aerosols.

**Inhibitor** A substance that is added to another to prevent or slow down an unwanted reaction or change.

**Irritant** A substance that produces an irritating effect when it contacts skin, eyes, nose, or respiratory system.

**LC50** See Lethal Concentration50.

**LD50** See Lethal Dose50.

**LEL** See Lower Explosive Limit.

**Lethal Concentration50** The concentration of an air contaminant that will kill 50 percent of the test animals in a group during a single exposure.

**Lethal Dose50** The dose of a substance or chemical that will kill 50 percent of the test animals in a group within the first 30 days following exposure.

**LFL** See Lower Explosive Limit.

**Lower Explosive Limit** (Also known as Lower Flammable Limit.) The lowest concentration of a substance that will produce a fire or flash when an ignition source (flame, spark, etc.) is present. It is expressed in percent of vapor or gas in the air by volume. Below the LEL or LFL, the air/contaminant mixture is theoretically too "lean" to burn. (See also UEL.)

**Minor Spills** Small chemical leaks that usually are detected early and present no immediate danger to personnel or the environment. These are spills that can be safely corrected with the advice of knowledgeable laboratory or supervisory personnel.

**MSDS** Material Safety Data Sheet

**Mutagen** Anything that can cause a change (or mutation) in the genetic material of a living cell.

**Narcosis** Stupor or unconsciousness caused by exposure to a chemical.

**NFPA** The National Fire Protection Association is a voluntary membership organization whose aims are to promote and improve fire protection and prevention. NFPA has published several volumes of codes known as the National Fire Codes.

**NIH** National Institute of Health

**NIOSH** The National Institute for Occupational Safety and Health is a federal agency that among its various responsibilities trains occupational health and safety professionals, conducts research on health and safety concerns, and test and certifies respirators for work place use.

**Odor Threshold** The minimum concentration of a substance in the air at which a majority of test subjects can detect and identify the substance's characteristic odor.

**OSHA** The Occupational and Safety Health Administration is a federal or state agency under the Department of Labor that publishes and enforces safety and health regulations for most businesses and industries in the United States.

**Oxidizer** A substance such as chlorate, permanganate, inorganic peroxide, nitrocarbonitrate, or a nitrate that yields oxygen readily to stimulate the combustion of organic matter.

**Oxygen Deficiency** An atmosphere having less than the normal percentage of oxygen found in normal air. Normal air contains approximately 21% oxygen at sea level.

**PEL** See Permissible Exposure Limit.

**Permissible Exposure Limit** An exposure limit that is published and enforced by OSHA as a legal standard. PEL may be either a time-weighted-average (TWA) exposure limit (8 hour), a 15-minute short term exposure limit (STEL), or a ceiling (C). The PELs are found in Tables Z-1, Z-2, or Z-3 of 29 CFR 1910.1000. This level of exposure is deemed to be the maximum safe concentration and is generally the same value as the threshold limit value (TLV).

**Personal Protective Equipment** Any devices or clothing worn by the worker to protect against hazards in the environment. Examples are respirators, gloves, and chemical splash goggles.

**Physical Hazard** A substance which is a compressed gas, explosive, flammable, organic peroxide, oxidizer, pyrophoric, unstable or water reactive.

**Polymerization** A chemical reaction in which two or more small molecules combine to form larger molecules that contain repeating structural units of the original molecules. A hazardous polymerization is the above reaction with an uncontrolled release of energy.

**Reactivity** A substance's susceptibility to undergoing a chemical reaction or change that may result in dangerous side effects, such as explosion, burning, and corrosive or toxic emissions. The conditions that cause the reaction, such as heat, other chemicals, and dropping, will usually be specified as "Conditions to Avoid" when a chemical's reactivity is discussed on a MSDS.

**Respirator** A device which is designed to protect the wearer from inhaling harmful contaminants.

**Respiratory Hazard** A particular concentration of an airborne contaminant that, when it enters the body by way of the respiratory system or by being breathed into the lungs, results in some bodily function impairment.

**Sensitizer** A substance that may cause no reaction in a person during initial exposures, but afterwards, further exposures will cause an allergic response to the substance.

**Sharps** Hypodermic needles, syringes, (with or without the attached needle), pasteur pipettes, scalpel blades, suture needles, blood vials, needles with attached tubing, and culture dishes (regardless of presence of infectious agents). Also included are other types of broken or unbroken glassware that were in contact with infectious agents, such as used slides and cover slips.

**Short Term Exposure Limit** Represented as STEL or TLV-STEL, this is the maximum concentration to which workers can be exposed for a short period of time (15 minutes) for only four times throughout the day with at least one hour between exposures.

**"SKIN"** This designation sometimes appears alongside a TLV or PEL. It refers to the possibility of absorption of the particular chemical through the skin and eyes. Thus, protection of large surface areas of skin should be considered to prevent skin absorption so that the TLV is not invalidated.

**STEL** See Short Term Exposure Limit

**Synonym** Another name by which the same chemical may be known.

**Systemic** Spread throughout the body; affecting many or all body systems or organs; not localized in one spot or area.

**Teratogen** An agent or substance that may cause physical defects in the developing embryo or fetus when a pregnant female is exposed to that substance.

**Threshold Limit Value** Airborne concentrations of substances devised by the ACGIH that represents conditions under which it is believed that nearly all workers may be exposed day after day with no adverse effect. TLVs are advisory exposure guidelines, not legal standards, that are based on evidence from industrial experience, animal studies, or human studies when they exist. There are three different types of TLV's: Time Weighted Average (TLV-TWA), Short Term Exposure Limit (TLV-STEL) and Ceiling (TLV-C). (See also PEL.)

**Time Weighted Average** (TLV-TWA, Threshold Limit Value-Time Weighted Average) The time weighted average airborne chemical concentration for a normal eight hour work day and a 40 hour work week to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.

**TLV** See Threshold Limit Value.

**Toxic** Substances such as carcinogens, irritants, or poisonous gases, liquids, and solids which are irritating to or affect the health of humans.

**Toxicity** The potential of a substance to exert a harmful effect on humans or animals and a description of the effect and the conditions or concentrations under which the effect takes place.

**Trade Name** The commercial name or trademark by which a chemical is known. One chemical may have a variety of trade names depending on the manufacturers or distributors involved.

**TWA** See Time Weighted Average.

**UEL** See Upper Explosive Limit.

**UFL** See Upper Explosive Limit.

**Unstable Liquid** A liquid that, in its pure state or as commercially produced, will react vigorously in some hazardous way under shock conditions (i.e., dropping), certain temperatures, or pressures.

**Upper Explosive Limit** Also known as Upper Flammable Limit. Is the highest concentration (expressed in percent of vapor or gas in the air by volume) of a substance that will burn or explode when an ignition source is present. Theoretically above this limit the mixture is said to be too "rich" to support combustion. The difference between the LEL and the UEL constitutes the flammable range or explosive range of a substance. (See also LEL.)

**Vapor** The gaseous form of substances which are normally in the liquid or solid state (at normal room temperature and pressure).

**Water Reactive** Substances that react violently when in contact with water. They can be either be flammable solids or corrosives.